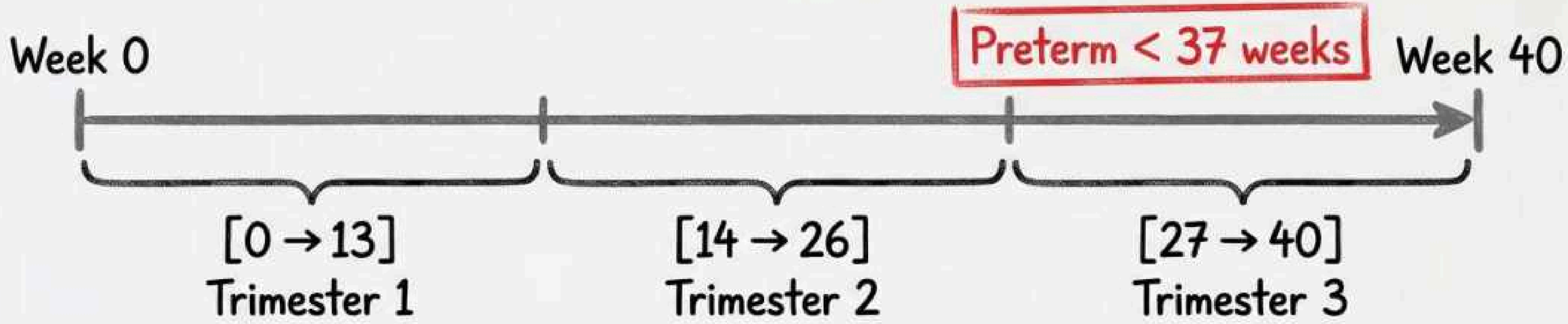
MED 532 B: Pregnancy, the Placenta, and Birth

¶ 5.1

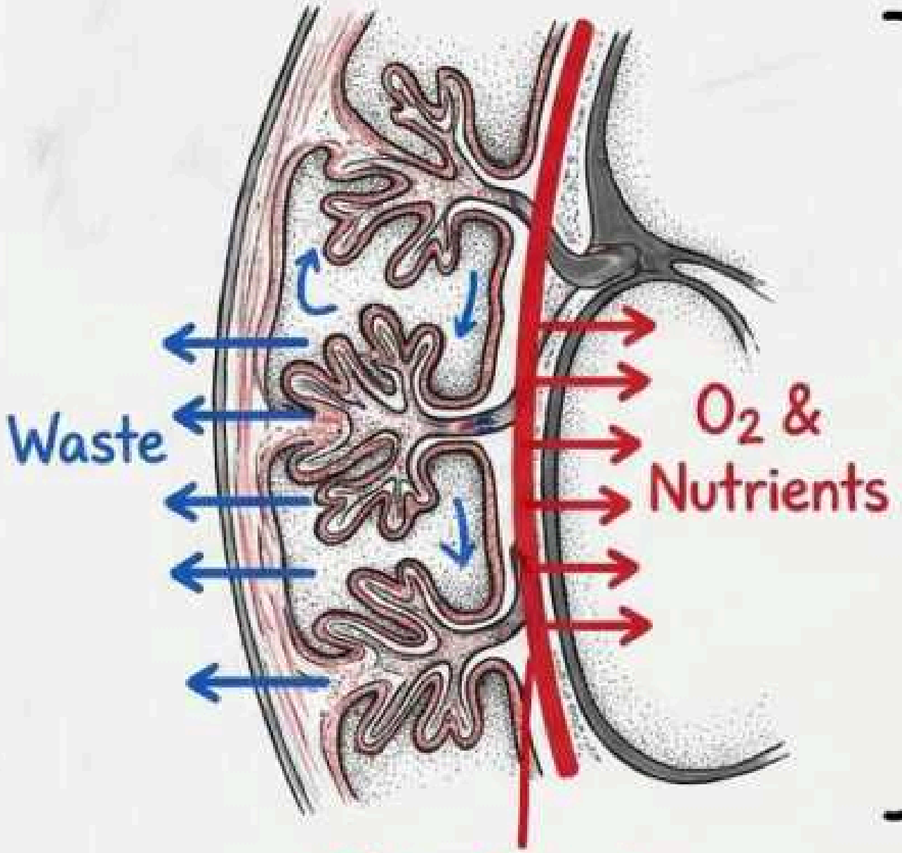
$$T_{Total} = 40 \text{ weeks (from LMP)} \approx 38 \text{ weeks (from fertilisation)}$$



- LMP: First day of Last Menstrual Period (Clinical baseline).
- Fertilisation: True biological start (~2 weeks post-LMP).

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¶ 5.2



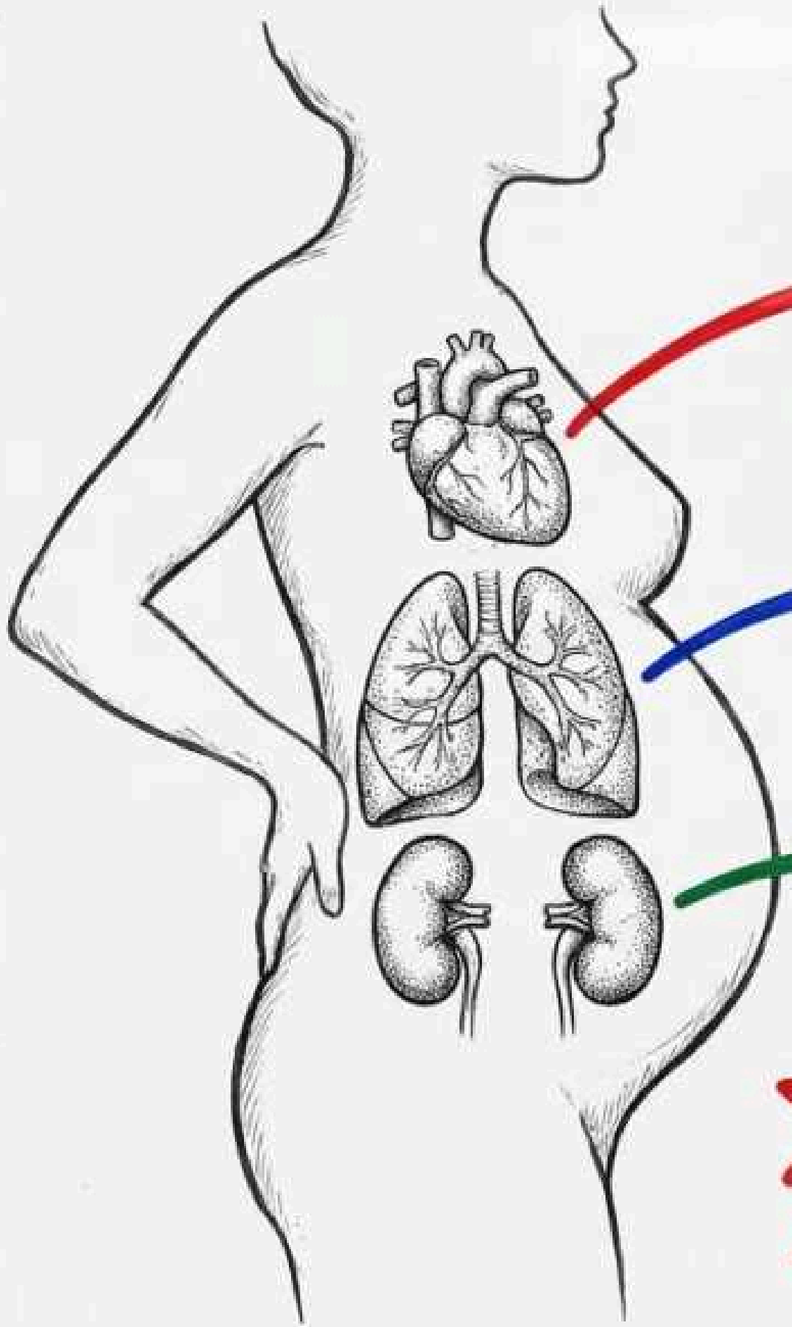
Dual Organ:
Life Support
+
Endocrine
Engine.

Hormone Factory

Placenta → hCG + Progesterone
+ Oestrogen
+ Insulin Resistance Hormone

↑ Insulin Resistance = ↑ Glucose Diverted to Fetus

¶ 5.3

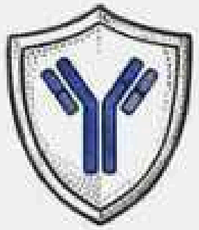


Δ Blood Volume ≈ +50%

↑ Cardiac Output

↑ Respiration Rate

↑ Renal Filtration Rate

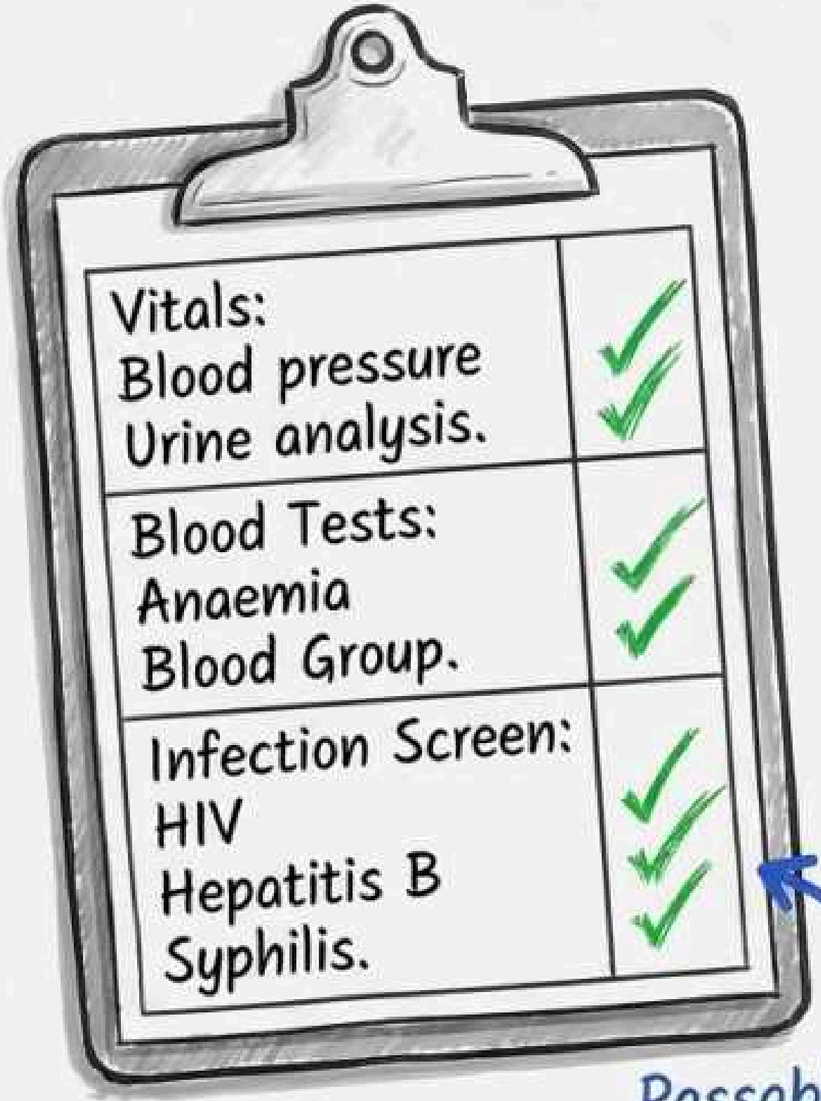


Immune system
Adapts to tolerate fetus (carrying paternal genes).

Caution: Normal reference ranges altered due to physiological adaptations.

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¶ 5.4

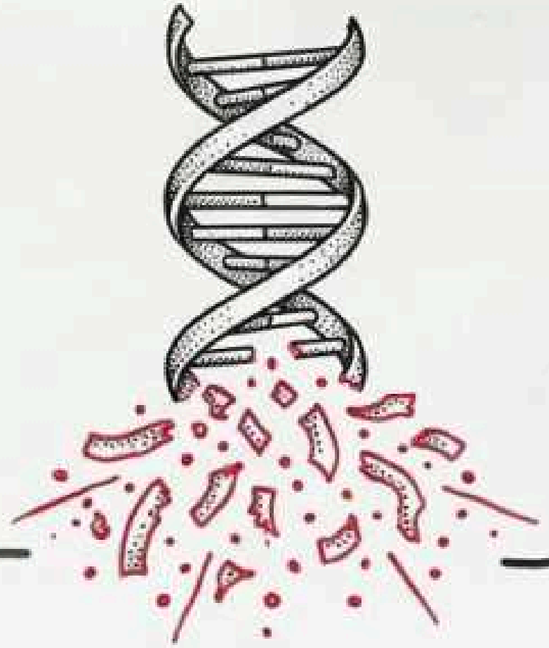


Passable to baby
but highly treatable.



Ultrasound Goals:
[Date pregnancy]
+
[Track development]
+
[Locate placenta]

¶ 5.5



Screening

Blood Tests
Ultrasound
NIPT (Analysis of fetal DNA fragments in maternal blood)

Probability/Risk

Diagnostic

Placenta / Amniotic Fluid sampling

Definite Answer

Screening ≠ Diagnosis

Testing is the parents' choice, supported by clear information.

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¶ 5.6

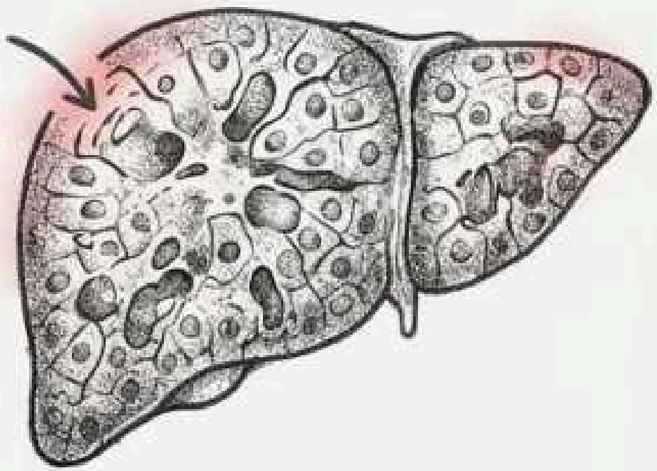
Onset ≥ 20 weeks ← Placental development failure



Capillary disruption

DAMAGED GLOMERULUS (KIDNEY)

Sinegular congestion



DAMAGED LIVER LOBULE

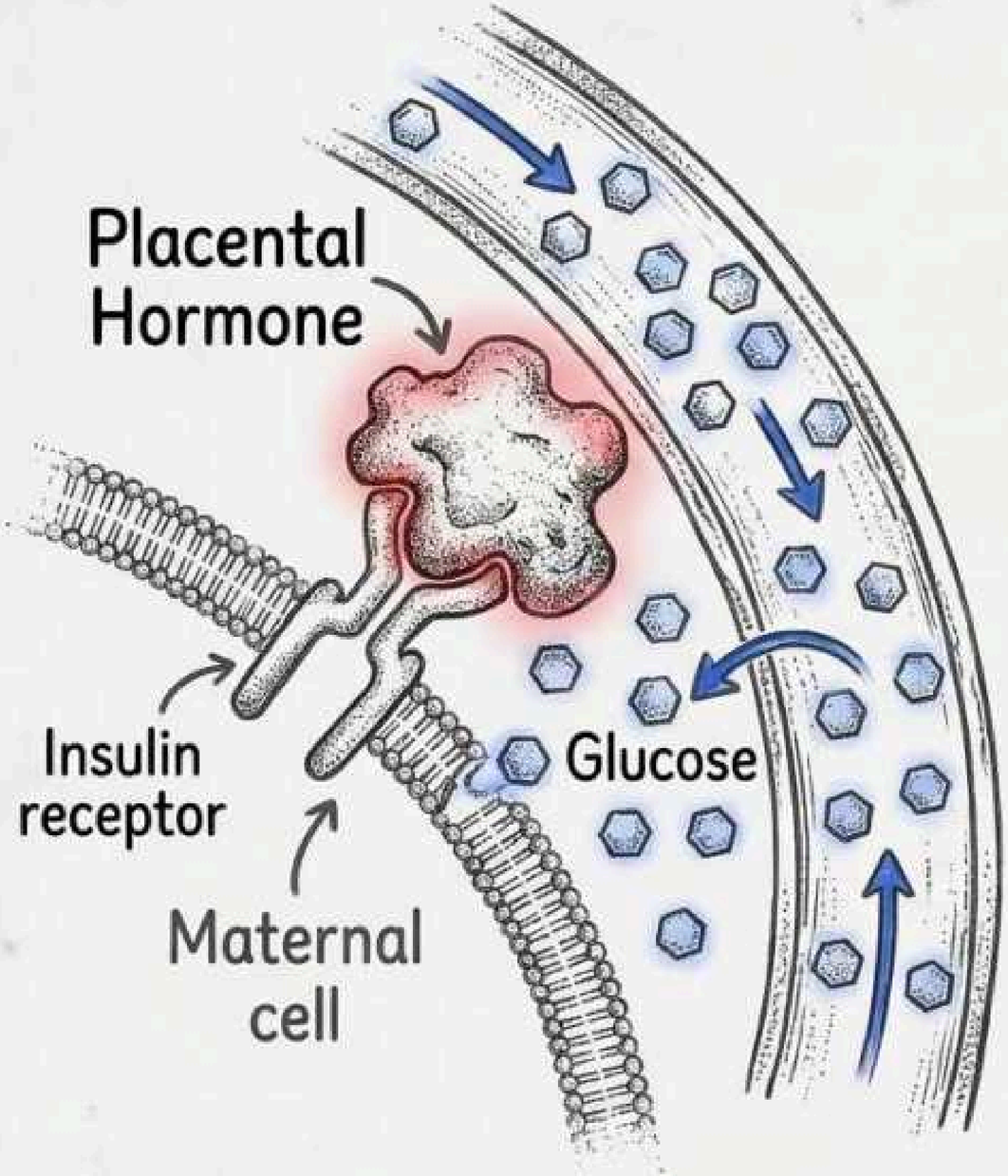
↑ BP + Organ Damage
(Kidneys/Liver)
→ Pre-Eclampsia

Pre-Eclampsia → (Progression) → Eclampsia (Seizures)

Treatment Logic

Prevention: Low-dose aspirin (for high-risk patients).
Definitive Cure: Δ = Delivery of baby + placenta.

¶ 5.7



Placental Hormones → ↑ Insulin Resistance → Gestational Diabetes.

Fetal Risk: Macrosomia (large baby) & Birth complications.

Management:

→ Diet
↓
→ Monitoring
↓
→ Medication (if needed)

Post-birth Prognosis:

Usually resolves post-birth, BUT signals a statistically significant ↑ lifelong risk for Type 2 Diabetes.

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¶5.8

Labour Trigger

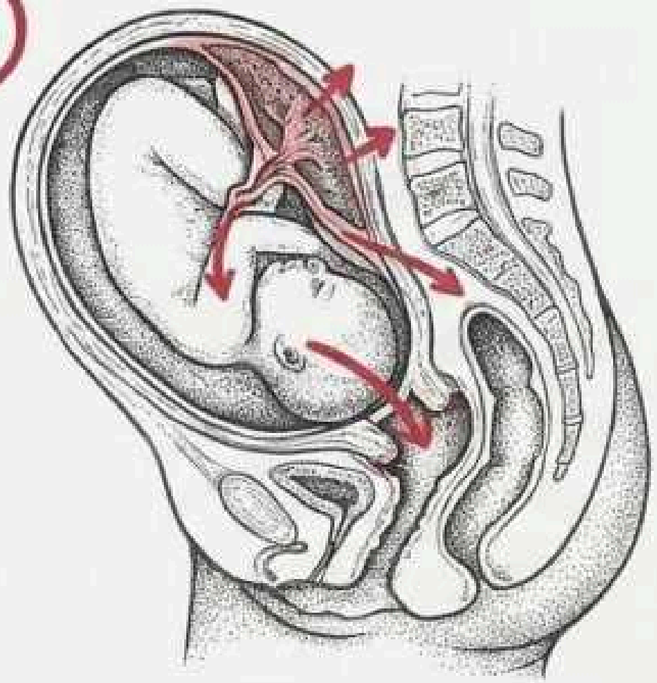
[Placenta/Fetus Signals] + [↑ Uterine Oxytocin Sensitivity] + [Prostaglandins (Cervix Softeners)] → Uterine Contractions

① 

Stage 1: Opening of the cervix.

② 

Stage 2: Birth of the baby.

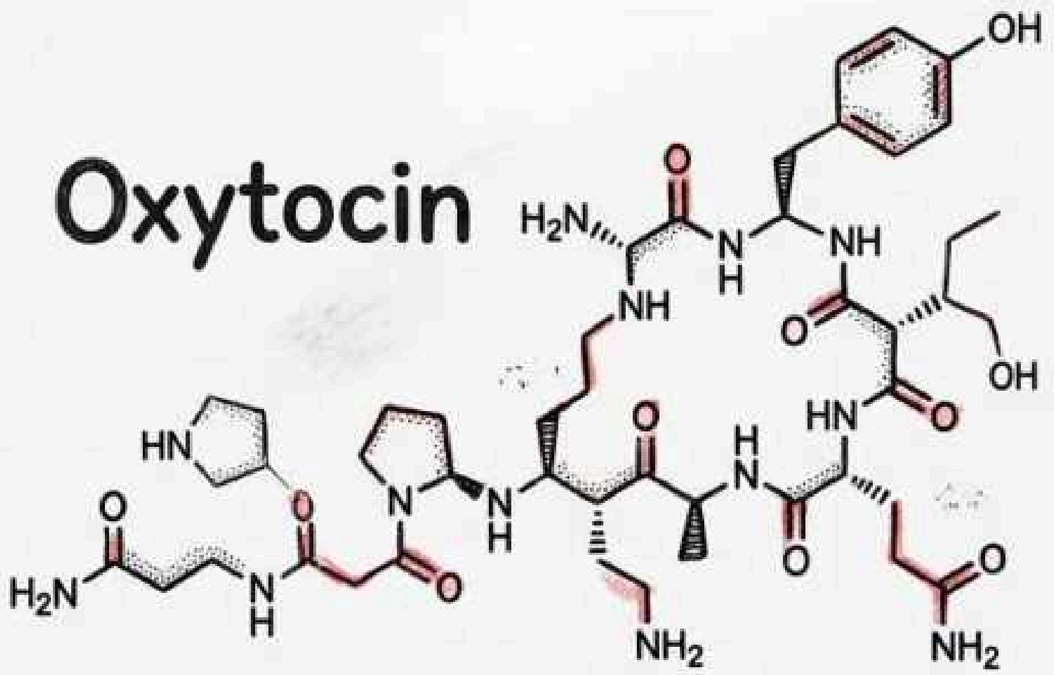
③ 

Stage 3: Delivery of the placenta.

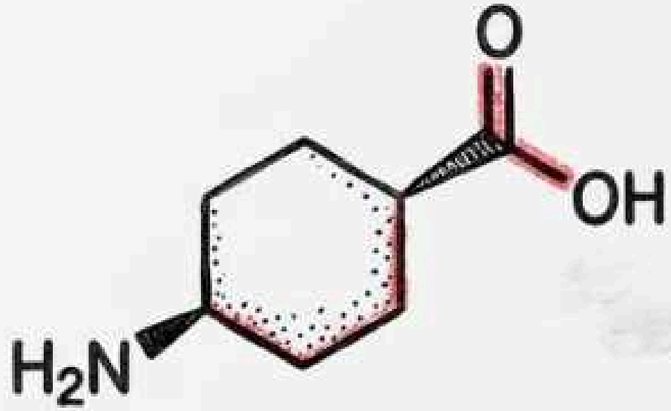
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¶ 5.9

Oxytocin



Tranexamic Acid

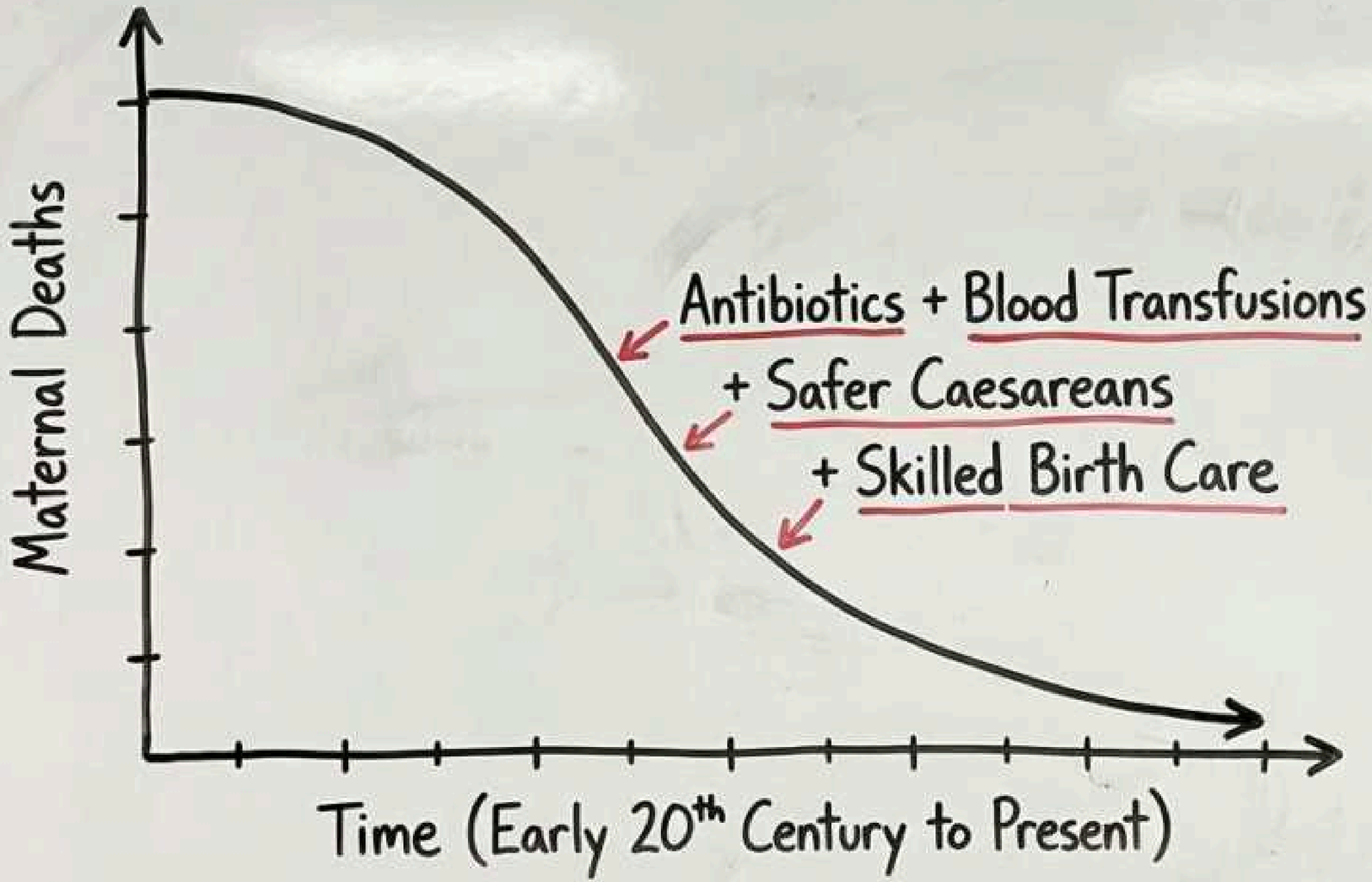


PREVENTABLE WITH EARLY INTERVENTION.

The Problem	The Mechanical Solution
Postpartum Haemorrhage (Leading global cause of maternal death).	Force the uterus to contract. • Rx 1: Oxytocin (Administered routinely post-birth). • Rx 2: Tranexamic Acid (Early administration reduces bleeding deaths, validated by 2017 mega-trial).

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¶ 5.10



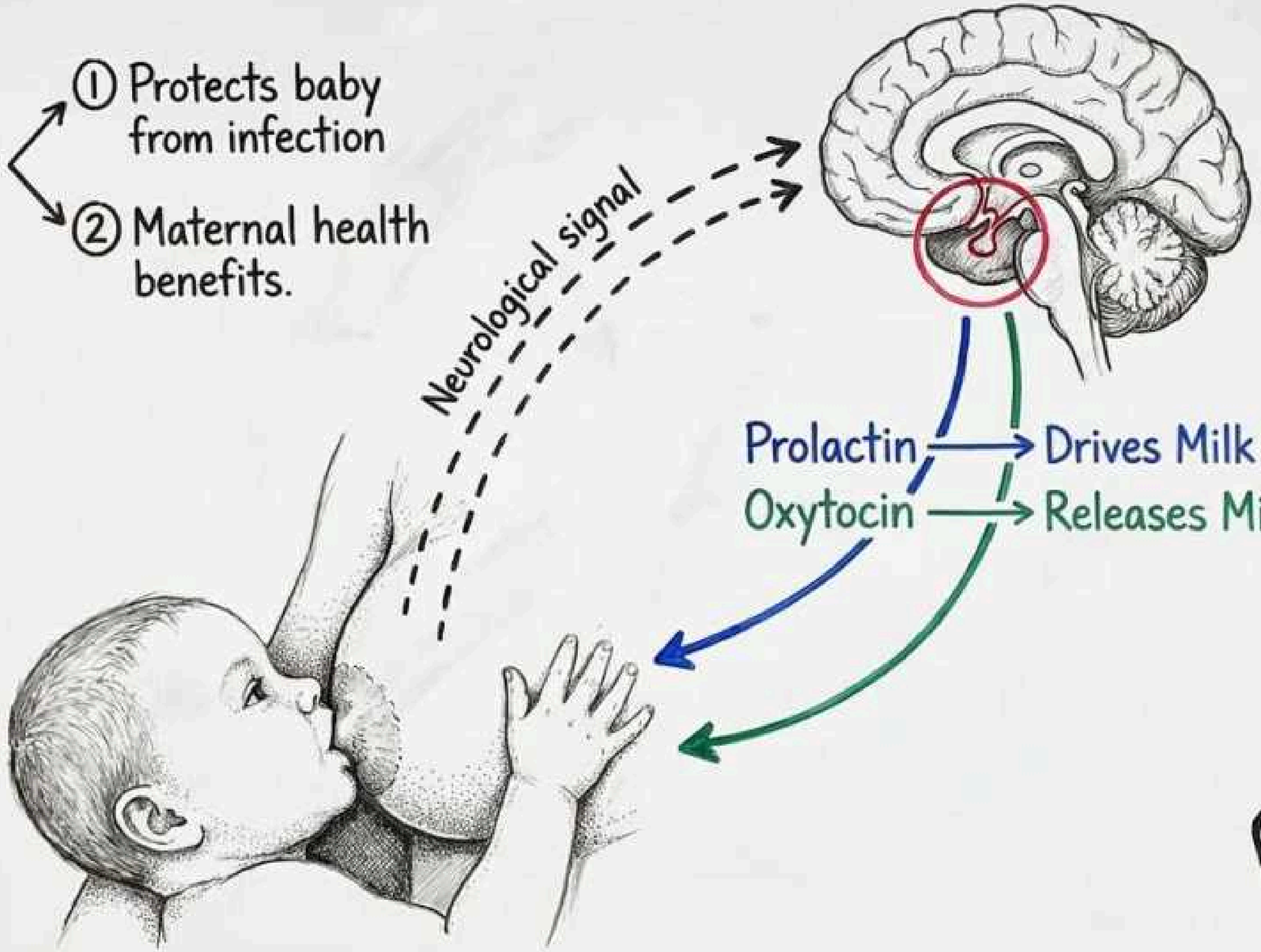
The Stark Reality (Low-Income Nations): Hundreds of thousands of deaths annually.

Current Global Deaths ≈ Mostly Low-Income ≈ Preventable

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¶ 5.11

Benefits:
- ① Protects baby from infection
- ② Maternal health benefits.



WHO Recommendation:
≈ 6 months exclusive
(with support for those who cannot or choose not to).

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¶ 5.12

Care: Antenatal care actively detects treatable issues.

Physiology:
Placenta sustains the fetus & shapes the mother's physiology.

Pregnancy & Birth

→ Next Lecture: Infertility, Contraception, and Menopause.



Dangers:
Pre-eclampsia & Postpartum bleeding require strict, systematic guarding.

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